

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): A silicon carbide-based heat-resistant porous structural material produced by a process comprising:

impregnating a carbonized porous structural body with molten silicon, the structural body comprising open pores open to a surface thereof generated by a volume-reduction reaction and porous silicon carbide having wettability to molten silicon,

wherein the carbonized porous structural body is formed by a process comprising applying a slurry by impregnation to a porous structural body ~~formed from~~ , which comprises powdered carbon and a binding agent and has a honeycomb, corrugated fiberboard or cardboard shape, carbonizing the slurry, and then performing reaction sintering, the slurry comprising powdered silicon and a resin useful as a carbon source.

Claims 2-3 (Canceled)

Claim 4 (Currently Amended): A method for manufacturing a silicon carbide-based heat-resistant porous structural material, comprising:

applying a slurry comprising powdered silicon and a resin useful as a carbon source by impregnation to a porous structural body ~~formed from~~ , which comprises powdered carbon and a binding agent and has a honeycomb, corrugated fiberboard or cardboard shape, then carbonizing the slurry at 900 to 1,300°C in a vacuum or an inert gas atmosphere, then performing reaction sintering at a temperature of 1,300°C or more in a vacuum or an inert gas atmosphere so as to form a carbonized porous structural body comprising open pores generated by a volume-reduction reaction and porous silicon carbide having wettability to molten silicon, and impregnating this carbonized porous structural body with silicon at a temperature of 1,300 to 1,800°C in a vacuum or an inert gas atmosphere.

Claim 5 (Currently Amended) A method for manufacturing a silicon carbide-based heat-resistant porous structural material, comprising:

applying a composition comprising a resin useful as a carbon source by impregnation to a porous structural body ~~formed from~~ , which comprises powdered carbon and a binding agent and has a honeycomb, corrugated fiberboard or cardboard shape, then carbonizing the composition at 900 to 1,300°C in a vacuum or an inert gas atmosphere so as to form a carbonized porous structural body having carbon generated on a surface thereof from the resin and comprising powdered carbon having wettability to molten silicon, and

impregnating this carbonized porous structural body with silicon at a temperature of 1,300 to 1,800°C in a vacuum or an inert gas atmosphere.

Claim 6 (Canceled)

Claim 7 (Previously Presented): The method according to Claim 4, wherein the resin is at least one selected from the group consisting of a phenol resin, a furan resin, a polycarboxysilane, an organic metal polymer, and pitch.

Claim 8 (Currently Amended): The method according to Claim 4, wherein the slurry further comprises at least one of powdered carbon, powdered graphite, and carbon black.

Claim 9 (Currently Amended): The method according to Claim 4, wherein the slurry further comprises at least one of silicon carbide, silicon nitride, titania, zirconia, zircon, alumina, silica, mullite, molybdenum disilicide, boron carbide, boron, and powdered silicon.

Claim 10 (Previously Presented): The method according to Claim 4, wherein the powdered silicon contained in the slurry and/or the silicon used for melt impregnation is a silicon alloy containing at least one element selected from the group consisting of magnesium, aluminum, titanium, chromium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, niobium, molybdenum, and tungsten, or a mixture of the above element and powdered silicon.

Claim 11 (Previously Presented): The method according to Claim 4, wherein the resin is at least one selected from the group consisting of a phenol resin, a furan resin, a polycarboxysilane, an organic metal polymer, and pitch and the slurry further comprises at least one selected from the group consisting of powdered carbon, powdered graphite, and carbon black.

Claim 12 (Previously Presented): The method according to Claim 4, wherein the slurry further comprises at least one selected from the group consisting of silicon carbide, silicon nitride, titania, zirconia, zircon, alumina, silica, mullite, molybdenum disilicide, boron carbide, boron, and powdered silicon, and the powdered silicon contained in the slurry and/or the silicon used for melt impregnation is a silicon alloy containing at least one element selected from the group consisting of magnesium, aluminum, titanium, chromium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, niobium, molybdenum, and tungsten, or a mixture of the above element and powdered silicon.

Claim 13 (Canceled)

Claim 14 (Previously Presented): The method according to Claim 5, wherein the resin is at least one selected from the group consisting of a phenol resin, a furan resin, a polycarboxysilane, an organic metal polymer, and pitch.

Claim 15 (Previously Presented): The method according to Claim 5 wherein the composition further comprises at least one of powdered carbon, powdered graphite, and carbon black.

Claim 16 (Previously Presented): The method according to Claim 5 wherein the composition further comprises at least one of silicon carbide, silicon nitride, titania, zirconia, zircon, alumina, silica, mullite, molybdenum disilicide, boron carbide, boron, and powdered silicon.

Claim 17 (Previously Presented): The method according to Claim 5, wherein the silicon used for melt impregnation is a silicon alloy containing at least one element selected from the group consisting of magnesium, aluminum, titanium, chromium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, niobium, molybdenum, and tungsten, or a mixture of the above element and powdered silicon.

Claim 18 (Previously Presented): The method according to Claim 5, wherein the resin is at least one selected from the group consisting of a phenol resin, a furan resin, a polycarboxysilane, an organic metal polymer, and pitch the composition further comprises at least one selected from the group consisting of powdered carbon, powdered graphite, and carbon black.

Claim 19 (Previously Presented): The according to Claim 5, wherein the composition further comprises at least one selected from the group consisting of silicon carbide, silicon nitride, titania, zirconia, zircon, alumina, silica, mullite, molybdenum disilicide, boron carbide, boron, and powdered silicon, and the silicon used for melt impregnation is a silicon alloy containing at least one element selected from the group consisting of magnesium, aluminum, titanium, chromium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, niobium, molybdenum, and tungsten, or a mixture of the above element and powdered silicon.